

## **REMARKS**

In the Office Action of July 9, 2008, the Examiner continued to reject claims 1, 6, 13, 15-17 and 20-35 and 37 under 35 U.S.C. §103(a) for being obvious over Dixon and claim 36 for being obvious over Dixon and Briggs independently in view of Wass. The withdrawal of the rejection of the claims under 35 U.S.C. §112, second paragraph, and under §102(b) for being anticipated by Briggs and the continued allowability of the subject matter of claims 8, 9 and 14 is appreciated. However, it is believed the rejected claims are not obvious in view of the cited references for the following reasons.

In Applicants' claimed process for the trimerisation of olefins, the catalyst system includes a heteroatomic ligand of the formula  $(R^1)R^2A-B-C(R^3)(R^4)$ , where A and C are phosphorus, B is a linking group between A and C and two or more of  $R^1$ - $R^4$  are "aromatic or hetero-aromatic groups containing at least one non-polar substituent on the atom adjacent to the atom bound to A or C," i.e., a non-polar substituent at the ortho position. An example of such a ligand is (o-ethylphenyl)<sub>2</sub>PN(methyl)P(o-ethylphenyl)<sub>2</sub>, the first group set forth in allowed claim 14.

The Examiner believes that such a claimed ligand structure is obvious over the generic ligand formula disclosed in line 1 of paragraph [0024] and the specific ligand bis-(2-diethylphosphino-phenyl)-amine disclosed in lines 3 and 4 of paragraph [0027] of Dixon. For clarity, it is noted that the linking group in this case is -CH<sub>2</sub>-CH<sub>2</sub>-NH-CH<sub>2</sub>-CH<sub>2</sub>-, (diethylamine) and not bis(phosphinophenyl)amine as maintained by the Examiner. In any event, the Examiner believes that because Dixon discloses that  $R^3, R^4, R^6$  and  $R^7$  in the general formula can be aryl substituted with a substituent selected from a list of 13 potential substituents in paragraph [0025], that the claimed ligand structure would be obvious over Dixon.

Applicants are familiar with the teachings of Dixon as it belongs to the same assignee, Sasol Technology (Pty) Limited and the published PCT application of Dixon (WO 03/053891) is cited and disclosed in the Background of the Invention section of the application beginning on page 2, line 5 of the specification.

In considering that the claimed ligand structure is obvious over Dixon, the Examiner has had to select a ligand of Dixon where 1) the R group is substituted with a non-polar group, 2) that the non-polar group is substituted at the ortho position and 3) that there are two or more occurrences of R. In this regard, it is noted that most of the substituents in paragraph [0025] of Dixon are polar substituents and not non-polar, and there is no disclosure that it should be at the ortho position, so it is only from a reading of Applicants specification that one skilled in the art would select such a ligand for use in the claimed method.

Applicants found that with the particularly claimed ligand the performance of the catalyst is significantly improved over the catalyst structures taught by Dixon. In support of their position, enclosed is a Declaration of David Hedley Morgan, one of the inventors, comparing the results of experiments conducted with catalysts of the present invention with ones from Dixon.

As noted therein, two important criteria of catalyst performance are its efficiency and activity. From the results shown in the Declaration, it can be seen that the activities and efficiencies of catalysts of the present invention that fall within the scope of claim 1 are vastly superior to the catalysts of the noted Examples of Dixon. Note for instance, that the highest catalyst activity of Dixon (Example 7) is lower than all of the reported

activities of the catalysts of Examples 2-14 of the present invention and is less than 10% of the highest reported activity (Example 6).

Accordingly, since Applicants have demonstrated the required criticality of the claimed ligand structure in view of the unexpected improvement in catalyst performance obtained by it, it is submitted that the method of claim 1 or of claims 6, 13, 15-17, 20, 35 and 37 dependent therefrom cannot be considered to be obvious over Dixon. Its withdrawal as a ground of rejection of these claims under §103(a) is therefore requested.

While claim 36 was rejected for being obvious over Dixon in view of Wass, since the claim depends from claim 1, it is submitted that it is patentable over this combination of references for the same reason.

The rejection of claim 36 over Briggs in view of Wass is not understood because Briggs shows nothing similar to the claimed ligand structure. If such a rejection is maintained, it would be appreciated how the Examiner believes Briggs renders obvious the ligand structure of the method of claim 1. If the Examiner had intended instead to reject claim 36 over Dixon in view of Briggs, it is submitted the claim is patentable over this combination of references also for the same reason expressed above.

An RCE is being filed with this Reply to enable the Examiner to consider the Declaration filed with the Reply.

It is believe that all of the pending claims are now in condition for allowance.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account 06-0916.

Respectfully submitted,

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**Attachments: Declaration of David Hedley Morgan**